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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/733,721	12/11/2003	Chi-Lin Chen	250914-1010	8561
24504	7590	02/10/2006	EXAMINER	
THOMAS, KAYDEN, HORSTEMEYER & RISLEY, LLP 100 GALLERIA PARKWAY, NW STE 1750 ATLANTA, GA 30339-5948			PERT, EVAN T	
			ART UNIT	PAPER NUMBER
			2826	

DATE MAILED: 02/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/733,721

Applicant(s)

CHEN ET AL.

Examiner

Evan Pert

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) 5 and 6 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 7-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Election/Restrictions

2. Applicant's election of Species I in the reply filed November 18, 2005 was made **without** traverse. Claims 5-6 are withdrawn from consideration as being directed to a non-elected species, *yet may be rejoined based upon allowance of generic claim 1.*

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-5 and 7-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1 and 8, "heating...with an IR" is potentially ambiguous since *what* the "IR" *is* isn't definitely recited; for purposes of examination, "an IR" is interpreted as being equivalent to "an IR energy source."

In claims 1-7, the limitation of "*providing* an amorphous silicon thin film *transistor*" is deemed ambiguous because the scope is unclear that the gate metal is *definitely and undoubtedly* included as part of the recited "amorphous silicon transistor" at the time when the amorphous is converted to polycrystalline.

Applicant's disclosure of embodiments only includes converting from amorphous to polysilicon when gate and source/drain metallization is completed (i.e. there is a "transistor" not just a structure "that will be a transistor").

Yet claims 1-7 do not clearly recite this "(complete) amorphous thin film *transistor*" limitation of scope, since one might reasonably designate a "partially completed amorphous silicon transistor" *structure* as being "an amorphous silicon thin film transistor" (*albeit* "an amorphous silicon thin film transistor *in the making*").

For purposes of examination, "providing an amorphous silicon thin film transistor" is taken to mean that the structure provided *necessarily has gate and source/drain metal completed*, such that the structure converted from amorphous to polysilicon gets converted when the gate and source/drain metal are in place (i.e. is deemed a "transistor").

Allowable Subject Matter

4. Claims 1 and 8 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.
5. Claims 2-4, 7 and 9-13 would be allowable if rewritten to overcome the rejections under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.
6. The following is a statement of reasons for the indication of allowable subject matter:

Generally, the prior art does not disclose applicant's idea of "changing an amorphous silicon thin transistor *directly into* a poly-silicon thin film transistor," which is, however, not claimed *per se* [see specification, p. 1, lines 8-9]:

The invention *is claimed* as "heating with an IR [i.e. an infra-red energy radiation source]" to change an "amorphous silicon thin film transistor" into a "poly-silicon thin film transistor," wherein the designation of an "amorphous thin film transistor," by applicant's *written description*, necessarily includes gate metal and drain/source metal that can be selectively heated with an IR energy source.

Prior art converting from amorphous to polycrystalline works on converting a precursor structure, not a "transistor" with gate, source and drain.

For example, US 5,773,329 to Kuo, in contrast to applicant's claimed method, does not disclose not forming a gate (e.g. 270) until *after* converting amorphous material to polycrystalline material; therefore, the Kuo reference does not disclose "*heating an amorphous silicon transistor* having gate and source/drain metal."

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 5,773,329 to Kuo is cited for disclosing the conversion of an amorphous silicon layer to polycrystalline in a transistor precursor structure [e.g. transition from Fig. 2f to 2g]; yet, the Kuo does not disclose "converting a...*transistor*".

The references to Huang et al., Jiang and Kaltenbrunner et al. are cited for disclosing IR properties of rapid thermal processing such as (PRTA or PRTP).

The JP 2000-68513 and JP-63-47980 documents are cited for disclosing converting parts of transistor precursor structure to polysilicon, but does not convert an entire "amorphous silicon thin film transistor."

US 5,817,548 is cited for disclosing IR selective heating of a gate metal to convert amorphous Si to polycrystalline Si, yet the source and drain metal is added after converting, such that the '548 does not disclose converting "an amorphous silicon thin film transistor," as interpreted under the rejection under 35 USC 112 above.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Evan Pert whose telephone number is 571-272-1969. The examiner can normally be reached on M-F (7:30AM-3:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on 571-272-1915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ETP
February 6, 2006


EVAN PERT
PRIMARY EXAMINER